JPEO-CBD

Chem/ Bio Defense and Future Combat System- Lessons Learned from OIF/OEF

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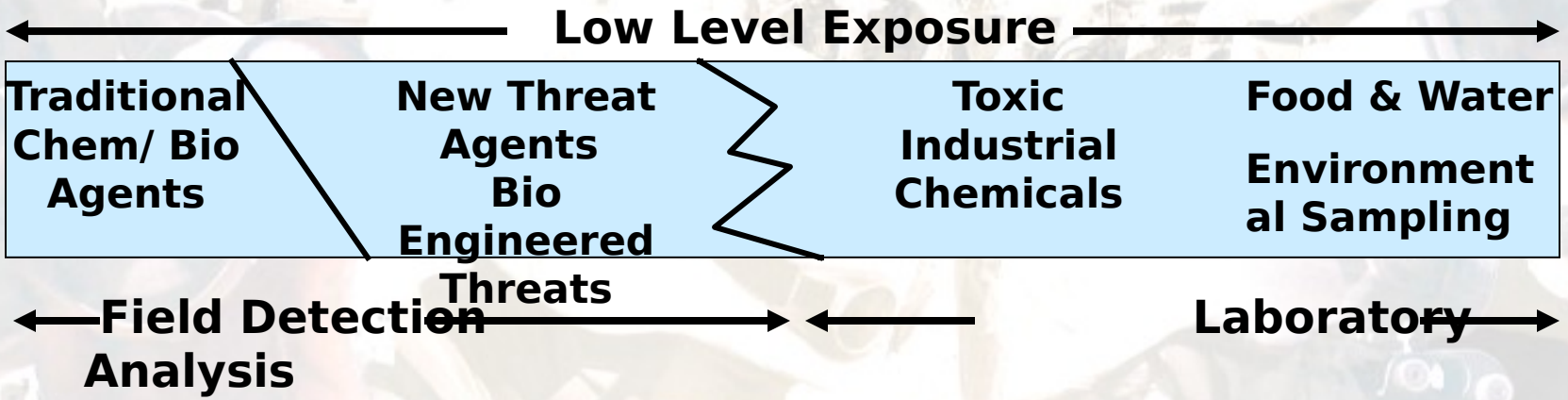
Overview

- Institutional/ Doctrinal
  - Engineering
    - Technology

Institutional/ Doctrinal- The Challenge

Force Protection



- Environmental Hazards Matter at Tactical Level
  - ✓ Toxic Industrial Chemicals/ Materials
  - ✓ Personal Exposure- Chemical/ Biological/ Radiological- Low Levels

- Medical & Non – Medical CBRN Information Systems Must Work Together
  - ✓ e.g. JWARN v. Medical Surveillance
  - ✓ Common Operating Picture Depends on Both

Institutional/ Doctrinal Implications For Future Combat System (FCS)

- Expanded CBRN Sensors in Smaller Footprint
  - ✓ Capabilities/ Density

- Leverage “The Network” – Soldiers “Get It”
  - ✓ IT Systems That Merge Detection & Medical Surveillance
  - ✓ Detect Forward – Process Elsewhere – Return Information As Needed
  - ✓ “Reach Back” Essential
    - Technical Issues
    - Strategic Issues- Treaty Compliance/ Attribution/ Intelligence

Engineering – The Challenge

- Biological Detection Is A Logistics “Hog”
  - ✓ Consumables
  - ✓ Transport & Storage
- Chemical Detectors With Radioactive Sources
  - ✓ Maintenance Intensive
- Decontamination
  - ✓ Materiel Compatibility
  - ✓ Volume
- Remotely Detecting and Identifying Threats

Engineering Challenges – Implications for Future Combat System

- "Dry" Biological Agent Detectors in Smaller Foot Print
  - ✓ "Smaller" not Realistic in Next 3-5 Years
- Mini "Mass Specs" – Both Chemical and Biological
- "Modularity" for CBRN Systems
  - ✓ Mission Tailored Detection/Warning
  - ✓ Consistent Underlying Technical Architecture
- Decon – Leverage ARL Materials Compatibility Database
- Leverage UAV's, UGV's, On-The-Move Stand-off CBRN Detection
  - ✓ Remote Access
  - ✓ Tipping & Queuing

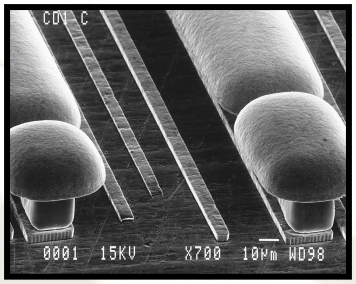
Technology – The Challenge

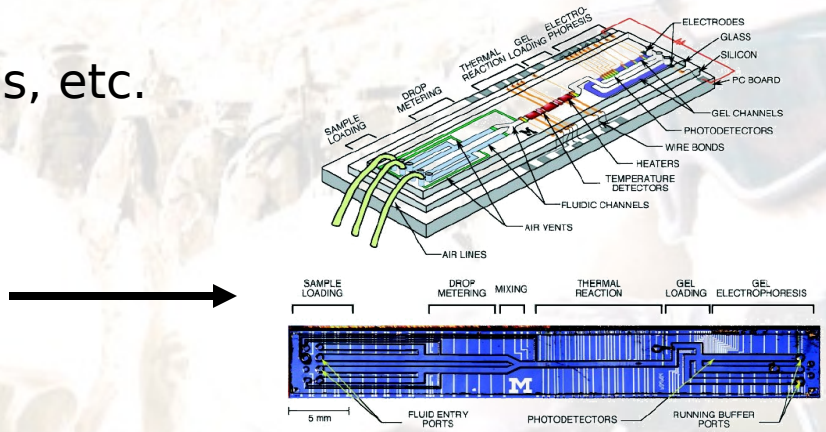
- Smaller, Lighter, High Reliability, “0” Maintenance
- “On-Demand” Production
- Increased Sensitivity, Selectivity in Shorter Times for Sensors
- Integrated Individual Protection/Collective Protection
- “Spiraling-In” Useful Technology Increments
  - ✓ Global Demand = World-Wide Technology Base
  - ✓ Maintaining Safety & Effectiveness in Product Lines

Technology – Implications for FCS

- Micro-Fluidics, Nano-Technologies, etc.

Integrated MicroBiosensor Chip





- Supports proliferating Chemical and Biological Sensors – Networking Essential
  - ✓ No Maintenance, Highly Reproduceable
- LED-Based Lasers
- Multi-Mission Sensors / Systems
  - ✓ Hyperspectral
  - ✓ Radars
  - ✓ Integrated IT Systems

QUESTIONS?